

Transportation Planning Academy

Division of Research, Innovation and System Information



La Keda Huckabay, Chief

Office of Planning, Programming
and Program Development

May 2017



Organizational Alignment

Caltrans Mission

- Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability.

Caltrans Vision

- A performance-driven, transparent and accountable organization that values its people, resources and partners, and meets new challenges through leadership, innovation and teamwork

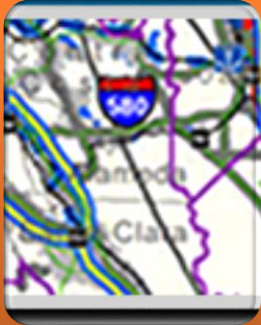
DRISI Purpose

- Provide solutions and knowledge that improve California's transportation system

Key DRISI Services



Research



Information
Services

Presentation Outline

- Research Program
- Information (Data) Services
- Questions

Key Research Services

Deliver research products

- From the idea stage to implementable product

Support the innovation needs of Caltrans practitioners

Conduct preliminary investigations and best practice research

Serve as national engagement liaisons

- Transportation Research Board, Cooperative Research Programs, US DOT, etc.

Caltrans Research Program Governance

	Membership	Function
Executive Board	Director Chief Deputy Director Deputy Directors District Directors	<ul style="list-style-type: none">• Set Caltrans strategic research direction• Help ensure implementation of research products
Research and Deployment Advisory Committee (RDAC)	Division Chiefs, Deputy District Directors	<ul style="list-style-type: none">• Recommend research priorities and funding allocation among research programs• Actively sponsor deployment of research products
Program Steering Committee (PSC)	Division Chiefs of contributing Divisions; District representatives and external partners, as appropriate to the program category	<ul style="list-style-type: none">• Adopt roadmaps for multi-year integrated research program• Develop program-level research priorities• Support deployment of research products
Technical Advisory Panel (TAP)	Technical experts from Divisions, Districts, DRISI, and external partners	<ul style="list-style-type: none">• Suggest, review, and rank problems and Preliminary Investigation requests• Identify deployment opportunities

See Deputy Directive 81 R1 https://onramp.dot.ca.gov/sw_policy/

Research Program

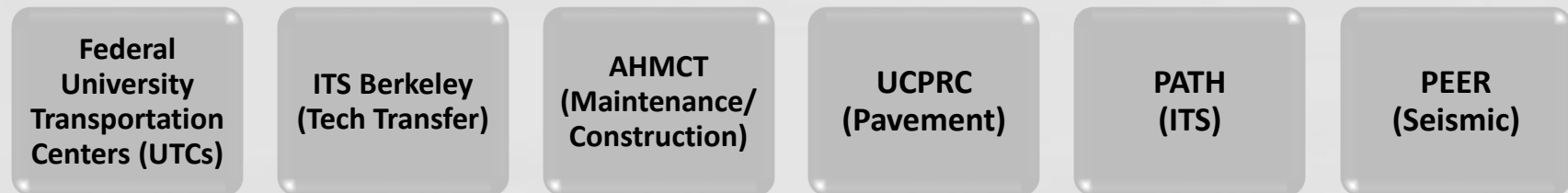
Functional Research – Program Steering Committees



National Research Program Areas



Caltrans Sponsored Research Partners



National Engagement: Transportation Research Board (TRB)

TRB is the major national multimodal transportation organization that brings practitioners and researchers together to solve critical transportation challenges

Ways planners can get informed and involved with TRB:

Access TRB research
Publications and
Online Databases

Serve on a TRB
Standing Committee,
Subcommittee, or
Task Force

Serve on a
Cooperative
Research Programs
Panel

Subscribe to TRB
Transportation
Research E-
Newsletter

Participate in
Webinars

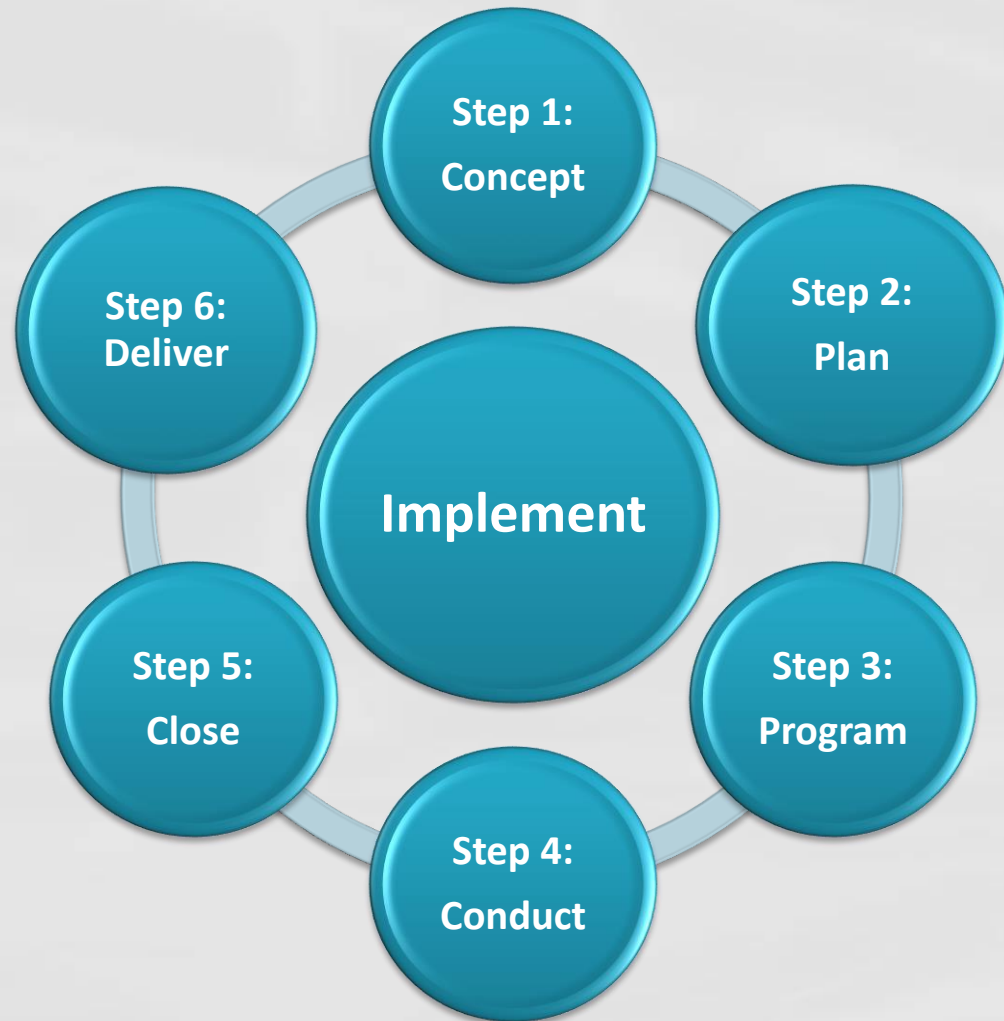
Submit a Paper or
Research Problem
Statement

Attend Conferences

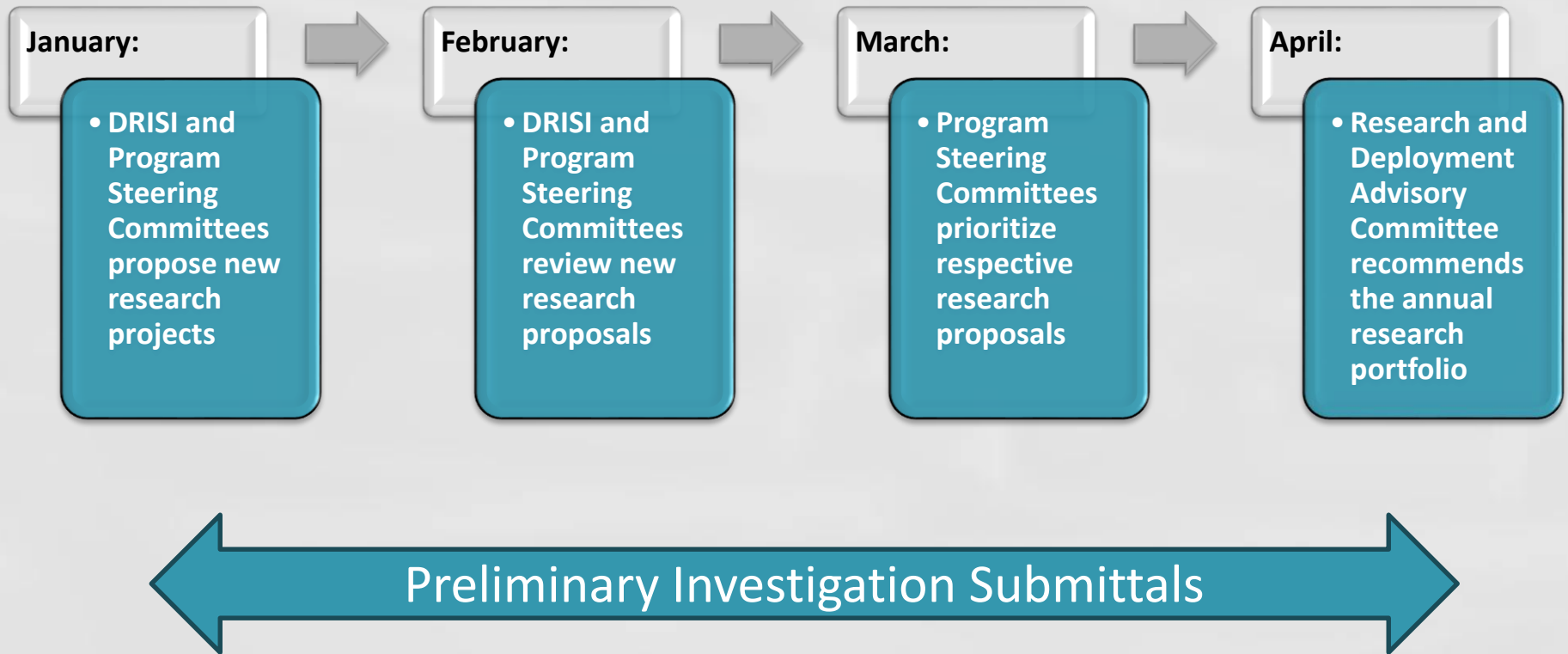
TRB's website: <http://www.trb.org>

How to Submit Your Research Needs

Steps to take
your research
need from an
idea to an
implementable
solution



Research Project Selection Timeline



Examples of Completed Research

Modal

- **Task 2508 – Testing Vehicle-Assist and Automation Technology in Public Transit Buses**
- **Task 2892 – Moving People Through Transit Stations Efficiently and Safely**

Planning

- **Task 2482 – Private Sector Road-Freight Logistics and Roadway Preservation**
- **Task 2603 – Analyzing How Road Roughness Affects Trucking and Freight**

Research Contacts

- <http://onramp.dot.ca.gov/newtech/>
- <http://www.dot.ca.gov/drisi/research-innovation.html>
- Environmental, Construction, Geotechnical/Structures, Pavement
 - Nick Burmas - (916) 616-9120

Research Contacts, cont.

- Design, Modal, Rural, Transportation Safety and Mobility
 - Pete Hansra (Acting) - (916) 654-7252
- Equipment, Maintenance, Right-of-Way and Land Surveys, National Programs
 - Joe Horton - (916) 654-8229
- Modal, Planning/Policy/Programming, Strategic Management
 - La Keda Huckabay - (916) 654-9368

Key System Information Services

Data, Information and Statistics

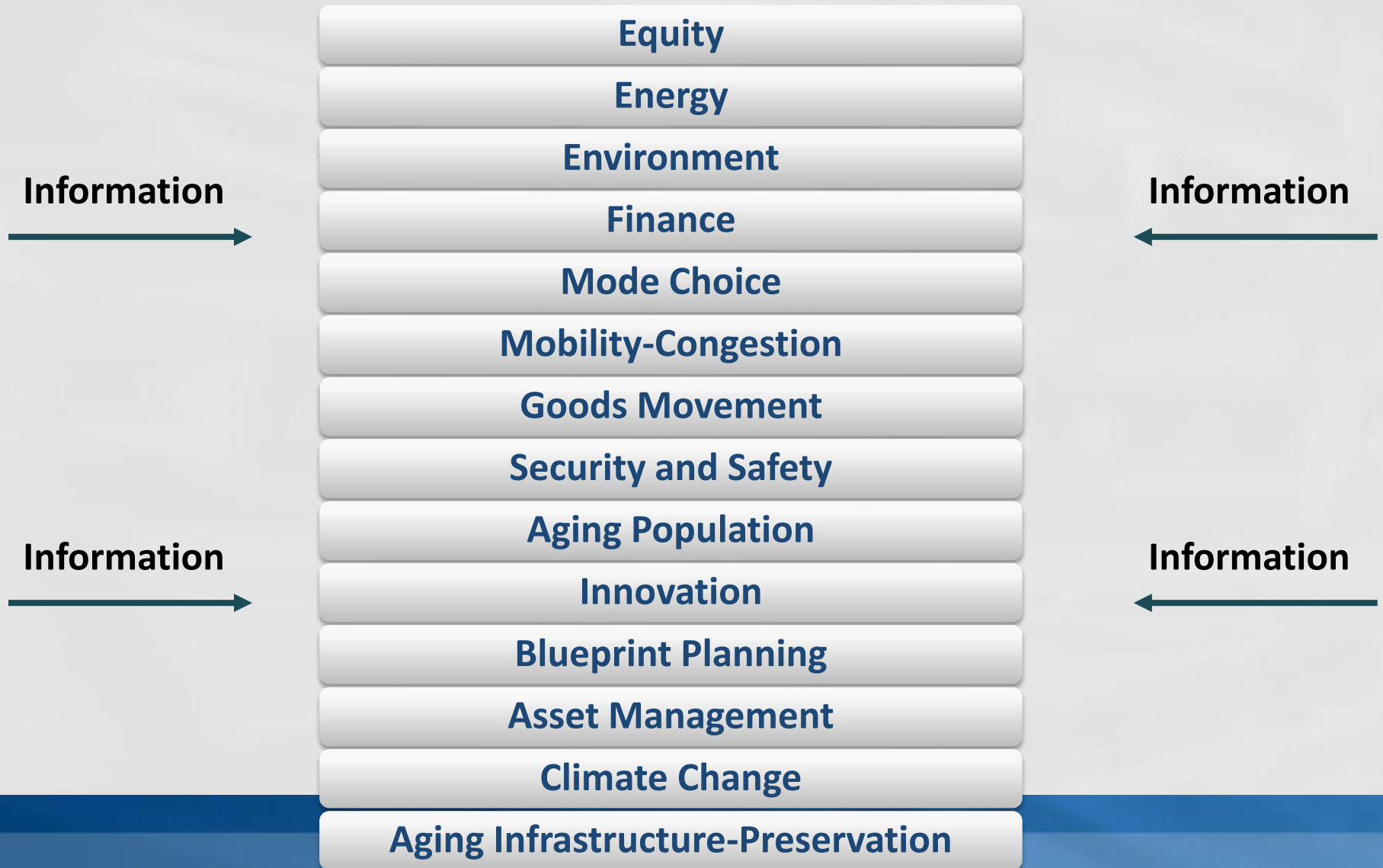
Geospatial Information Systems

Highway System Information

Highway Systems Designations

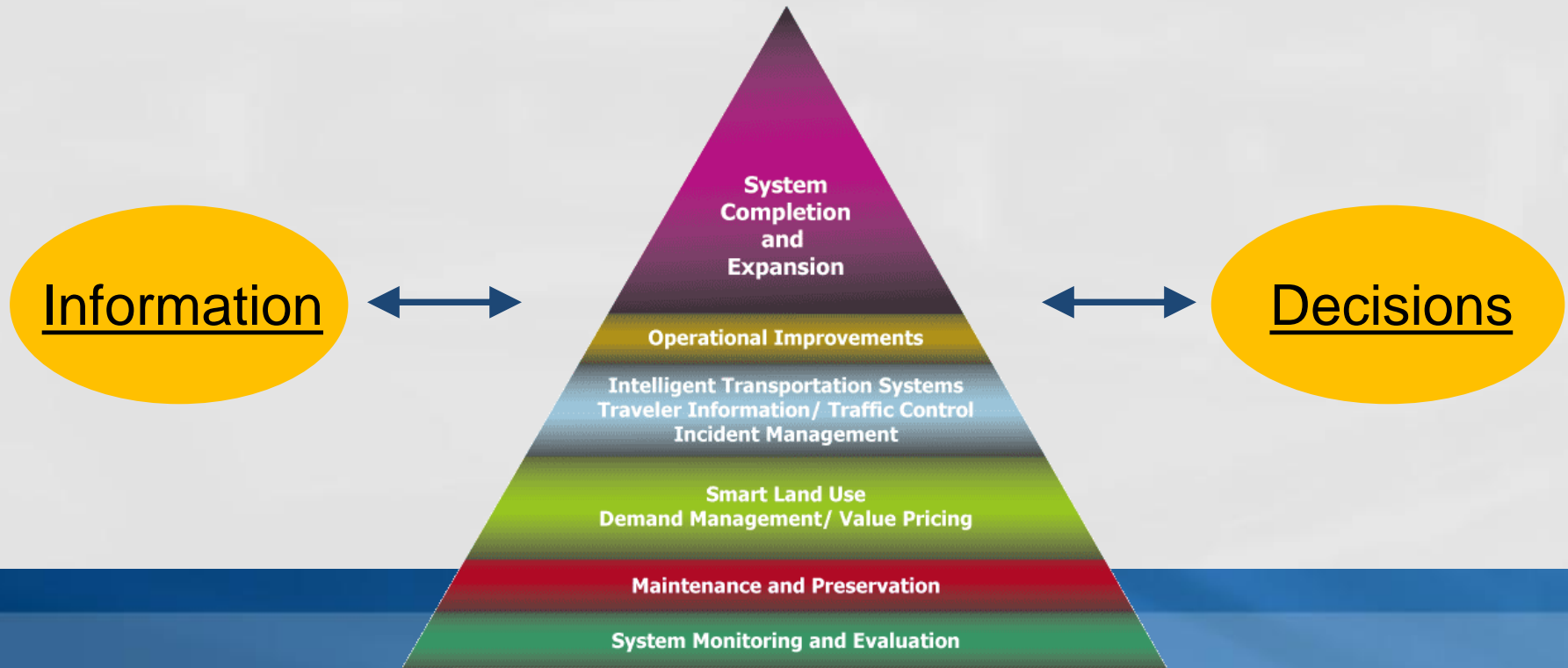
Federal Reporting (performance and fiscal)

Critical Transportation Decision Areas



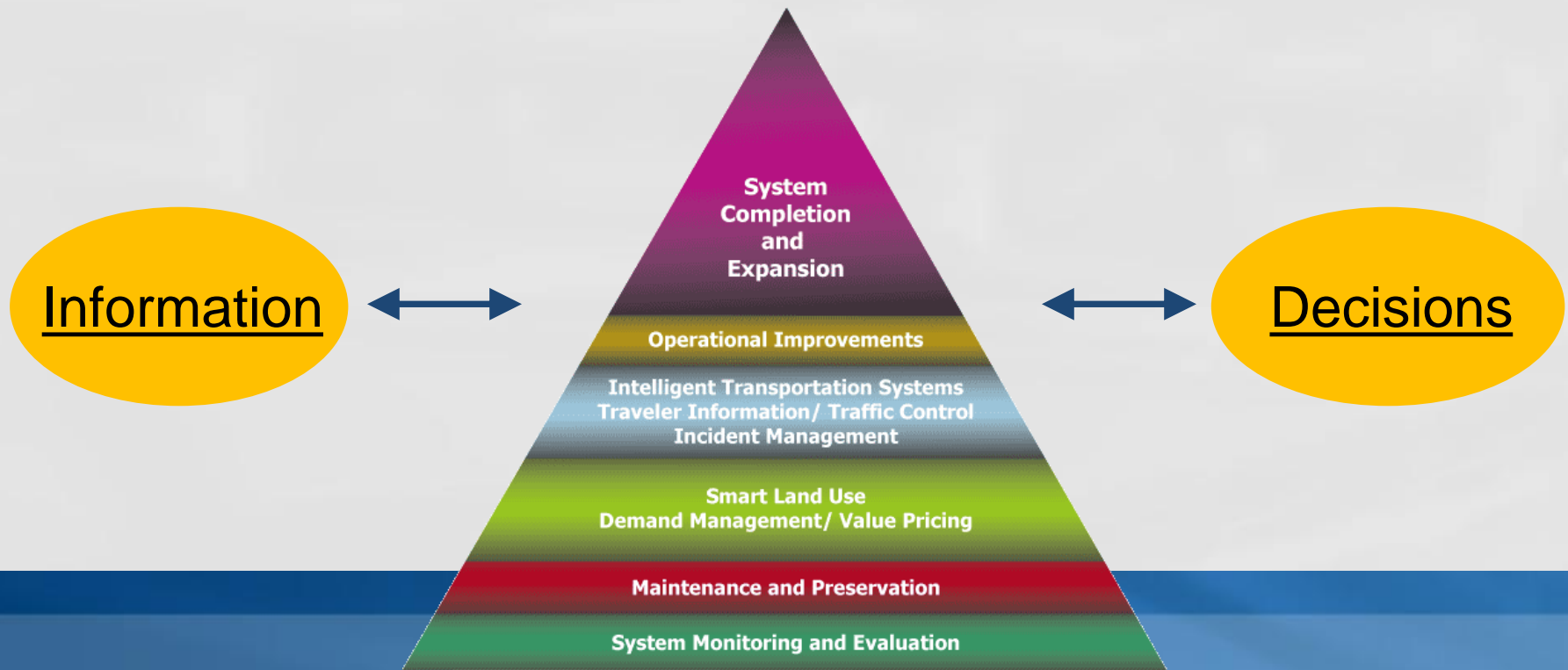
What we do...

- Collect, report, manage, and analyze data
- Develop spatial data for analysis
- Provide data governance to enable data sharing
- Our FOCUS - the right and consistent quality information to support decision making



What we do, cont...

- Data Analysis and Geospatial Information Systems
- Highway System Information and Performance



What is Data?

- Raw observation, measurement or fact
- Events, Transactions, observations, building blocks to support automation

What is Information?

- Trends, patterns, and judgments
- Data processed to meet quality and timeliness needs of customers
- Transformed data

This is Data

Source: 2014 California
Public Road Data

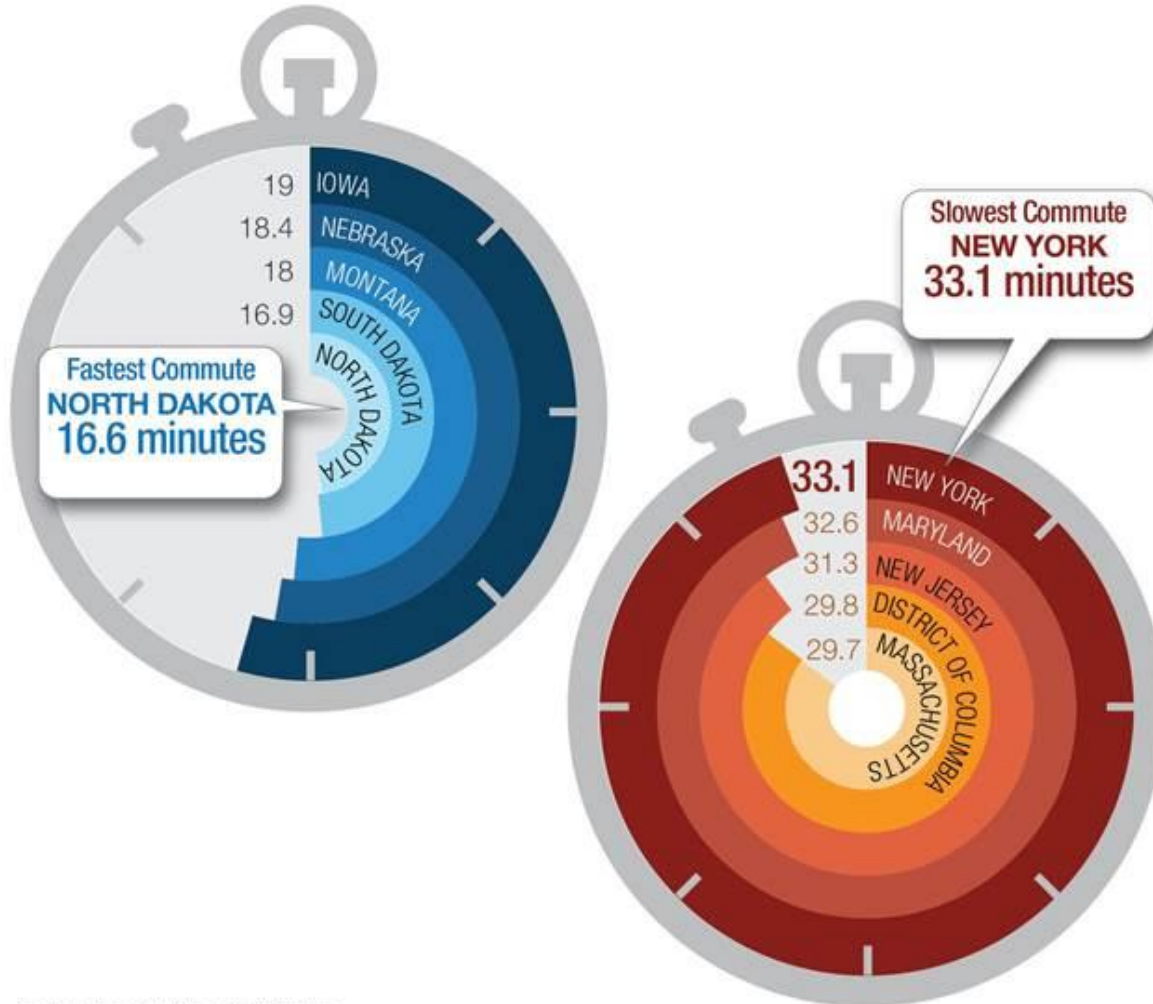
Table 1

**2014 Maintained Road Miles and Estimated
Annual Vehicle Miles of Travel (AVMT)
by Type of Jurisdiction**

<u>JURISDICTION</u>	<u>TOTAL MAINTAINED MILES</u>	<u>LANE MILES</u>	<u>TOTAL AVMT (IN MILLIONS)</u>
CITY STREETS	76,914.80	174,929.19	120,071.31
COUNTY ROADS	64,440.82	131,508.42	32,651.85
STATE HIGHWAYS	15,099.84	51,899.65	180,811.76
FEDERAL AGENCIES	14,915.47	29,829.43	978.58
ARMY CORPS OF ENGINEERS	150.00	300.00	14.82
BUREAU OF INDIAN AFFAIRS	800.90	1,601.80	17.54
DEPARTMENT OF ENERGY	0.25	0.50	0.08
NATIONAL PARK SERVICE	1,501.89	3,003.78	74.98
U.S. ARMY	643.17	1,286.34	129.38
U.S. BUREAU OF LAND MANAGEMENT	589.66	1,179.32	2.15
U.S. BUREAU OF RECLAMATION	27.70	53.90	1.02
U.S. FISH & WILDLIFE SERVICE	169.42	338.84	2.20
U.S. FOREST SERVICE	8,299.57	16,599.13	90.88
U.S. MARINE CORPS	947.62	1,895.25	223.09
U.S. NAVY	1,785.29	3,570.58	422.44
OTHER STATE AGENCIES	3,027.55	6,055.10	112.82
STATE DEPT OF WATER RESOURCES	1.02	2.04	0.66
STATE FORESTRY SERVICES	273.85	547.70	1.00
STATE PARK SERVICE	2,752.68	5,505.36	111.16
OTHER LOCAL AGENCIES	0.40	0.80	0.18
PORT OF OAKLAND	0.40	0.80	0.18
OTHER AGENCIES	403.97	811.86	61.05
GOLDEN GATE BRIDGE	1.60	5.17	23.69
INDIAN TRIBAL NATION	394.20	788.40	8.63
SAN DIEGO UNIFIED PORT DISTRICT	1.25	2.84	1.79
UNIVERSITY OF CALIFORNIA	6.92	15.45	26.94
STATEWIDE TOTAL	174,802.85	395,034.45	334,687.55

Top 5 Fastest and Slowest Commutes by State

The Midwest leads all States for short commute times.



Source: American Community Survey.

For more information: http://www.fhwa.dot.gov/planning/census_issues/american_community_survey/

This is
Information

Fun Fact from the Caltrans Fact Booklet

- How many ferry boats does Caltrans own?



Your poll will show here

1



Install the app from
pollev.com/app

2

Make sure you are in
Slide Show mode

Still not working? Get help at pollev.com/app/help
or

[Open poll in your web browser](#)



California Quick Facts

SACRAMENTO COUNTY TRANSPORTATION QUICK FACTS (Published in 2016)	
<u>Transportation System Extent:</u> State Highways: 214 miles Other Public Roads: 4,904 miles All Public Roads: 5,119 miles Number of Bridges: 721 Public Use Airports: 7	<u>Goods Movement:</u> Air Cargo: 127,718 tons Waterborne Shipments: not applicable
<u>Vehicles and Conveyances:</u> Automobiles Registered: 918,131 Motorcycles Registered: 33,242 Trucks Registered: 217,897 Bus Inventory: 290	<u>Household Travel:</u> Commute by Car Alone: 75.6% Commute by Car/Vanpool: 11.8% Commute by Public Transit: 3.0% Commute by Bicycle and Walk: 3.3% Commute by Other: 1.2% Work at Home/Telecommute: 5.1% Average Commute Time: 25.9 minutes
<u>Annual Vehicle Miles Traveled:</u> Total Roadway: 12,781,274 ¹ State Highway: 5,552,851 Local Roadway: 7,225,237 ¹ Includes all jurisdictions (city, county, state, federal, and other agency roads)	<u>Socio-Economics:</u> Median Household Income: \$55,615 Licensed Drivers: 989,415
<u>Rail, Transit, and Air Passengers:</u> Bus Passengers: 14,815,809 Rail, Street Car, Trolley: 12,710,476 Air Passengers: 8,970,306	<u>Geographic:</u> Population: 1,495,297 Land Area: 965 square miles Average Persons per Square Mile: 1,550 Cities: 7

Sources:

Caltrans California Department of Transportation
 California Department of Finance
 California State Controller's Office
 California Board of Equalization
 California Department of Motor Vehicles
 Association of American Railroads

American Association of Port Authorities
 Federal Aviation Administration
 United States Army Corp of Engineers
 U.S. Census Bureau
 U.S. Department of Commerce
 U.S. General Services Administration

Notes: Data figures posted by Caltrans may not reflect rounding or audits made by source agencies. For detailed source information on data listed, refer to the Caltrans webpage for 'California Quick Facts':
http://www.dot.ca.gov/hq/tsp/data_library.php

Updated: June 2016

Geospatial Information Systems (GIS)

- **Office of Data Services and Technology**
 - <https://onramp.dot.ca.gov/tsi/odst.html>
- **Geospatial Enterprise Operations**
 - Data Library
 - Spatial Data Infrastructure / Clearinghouse
 - Web GIS
- **Linear Referencing Services**
 - All Roads LRS
 - Postmile Query Tool
 - Postmile Web Service
- **GIS Coordinators**
 - <https://onramp.dot.ca.gov/tsi/odagis/gis/GIScoordinators/GIScoordinators.php>

Geospatial Enterprise Operations

- **Caltrans GIS Data Library**
- **Caltrans Web Map Gallery**
- **Geospatial Data Management and Discovery (Voyager Search)**
- **Web Mapping (Esri's ArcGIS Online and Portal)**



Skip to: [Content](#) | [Footer](#) | [Accessibility](#)

GO

- [Home](#)
- [Travel](#)
- [Business](#)
- [Engineering](#)
- [News](#)
- [Maps](#)
- [Jobs](#)
- [About Caltrans](#)
- [Contact Us](#)

- >> [DRISI Home](#)
- >> [DRISI System Information](#)
- >> [About SI](#)
- >> [SI Services](#)
- >> [SI Data](#)
- >> [SI FAQs](#)
- >> [SI Site Map](#)
- >> [SI Contacts](#)

Caltrans GIS Data

We provide downloadable GIS data created by Caltrans in zipped shapefile format. The download link is located at the bottom of each data description page. Please read the description and data disclaimer prior to downloading. You can also interactively view data, create maps, and [print out](#) the results using our Preview Data Online mapping tools. If you are looking for GIS data sourced from departments other than Caltrans, please visit the [California Geoportal](#) or other related data sites to get the most recent datasets. Please contact us at caltrans.gislib@dot.ca.gov if you have any questions.

The Caltrans GIS Data Library works best with Google Chrome, Firefox, and Internet Explorer 10+.

Preview Data Online:



[Aviation Data List](#)



Caltrans Web Map Gallery

Welcome to the Caltrans Online Map Gallery - a series of interactive web maps viewing experience of California-focused transportation themes and supporting

Q



California Aviation Facilities

Web Mapping Application by HQ_DRISI. Last Modified Apr 1, 2014

This map displays aviation facilities across California.

(461 views)





California Public Use Airports

This layer represents public use airports classification.

Last Modified: April 11, 2014





California Airport Boundary

This polygon features the boundary of all California airports.



California Rail Systems

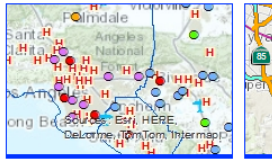
Web Mapping Application by HQ_DRISI. Last Modified Apr 1, 2014

This map shows various rail systems and stations across California.

We provide downloadable GIS data created by Caltrans in zipped shapefile format. The download link is located at the bottom of each data description page. Please read the description and data disclaimer prior to downloading. You can also interactively view data, create maps, and [print out](#) the results using our Preview Data Online mapping tools. If you are looking for GIS data sourced from departments other than Caltrans, please visit the [California Geoportal](#) or other related data sites to get the most recent datasets. Please contact us at caltrans.gislib@dot.ca.gov if you have any questions.

The Caltrans GIS Data Library works be

Preview Data Online:



Aviation Data List



California Public Use
This layer represents
public use airports
classification.
Last Modified: April 11,



[California Airport B](#)
This polygon featur
Coltrans to display



Welcome to the Caltrans Online Map Gallery - a series of interactive web maps designed as a collective viewing experience of California-focused transportation themes and supporting information.

Search maps



Web Mapping Application by HQ_DRISI. Last Modified Apr 19, 2017.

This map displays aviation facilities across California.

(461 views) [↗](#)



Web Mapping Application by HQ_DRISI. Last Modified Apr 19, 2017.

This map show various rail systems and stations across California. It also includes miscellaneous data related to the rail network.

(517 views)

Disclaimer: The maps and data are made available to the public solely for informational purposes. Information provided by the Caltrans GIS Data Library is accurate to the best of our knowledge and is subject to change on a regular basis, without notice. While Caltrans makes every effort to provide useful and accurate information, we do not warrant the information to be authoritative, complete, factual, or timely. Information is provided on an "as is" and an "as available" basis. The California Department of Transportation is not liable to

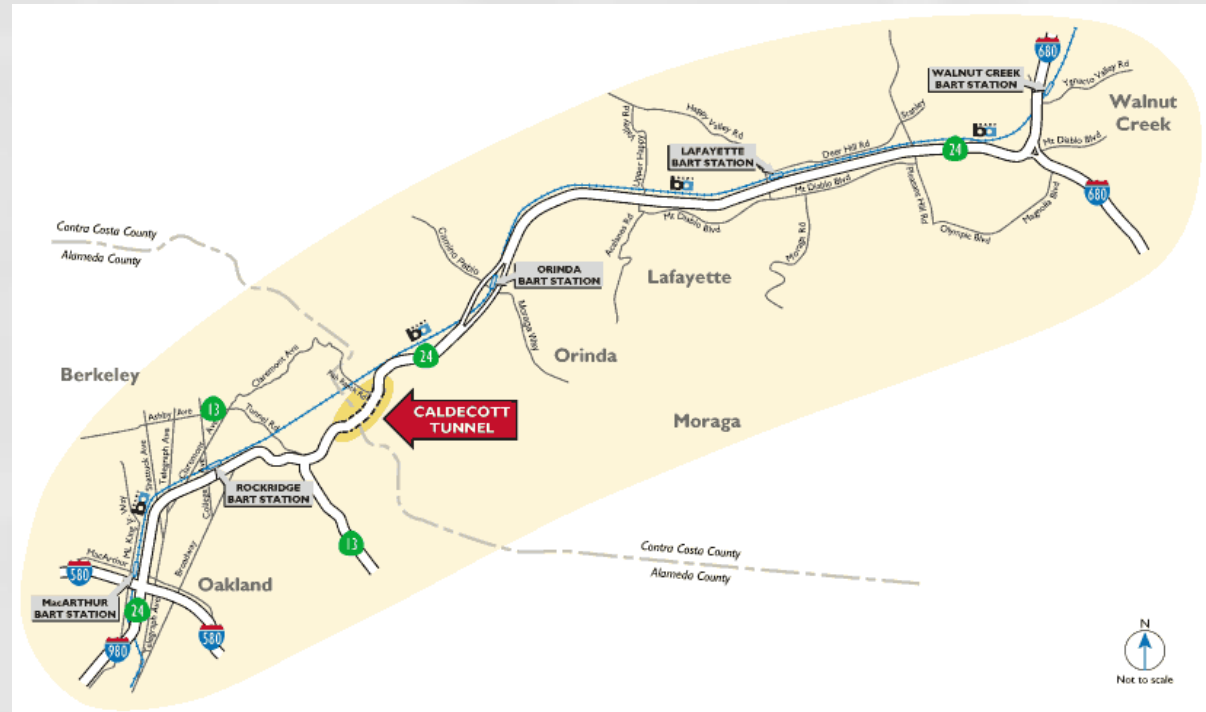
Managing Location Based Information

- 90% of Department data is spatial context

GIS integrates

- Assets
- Events
- Plans

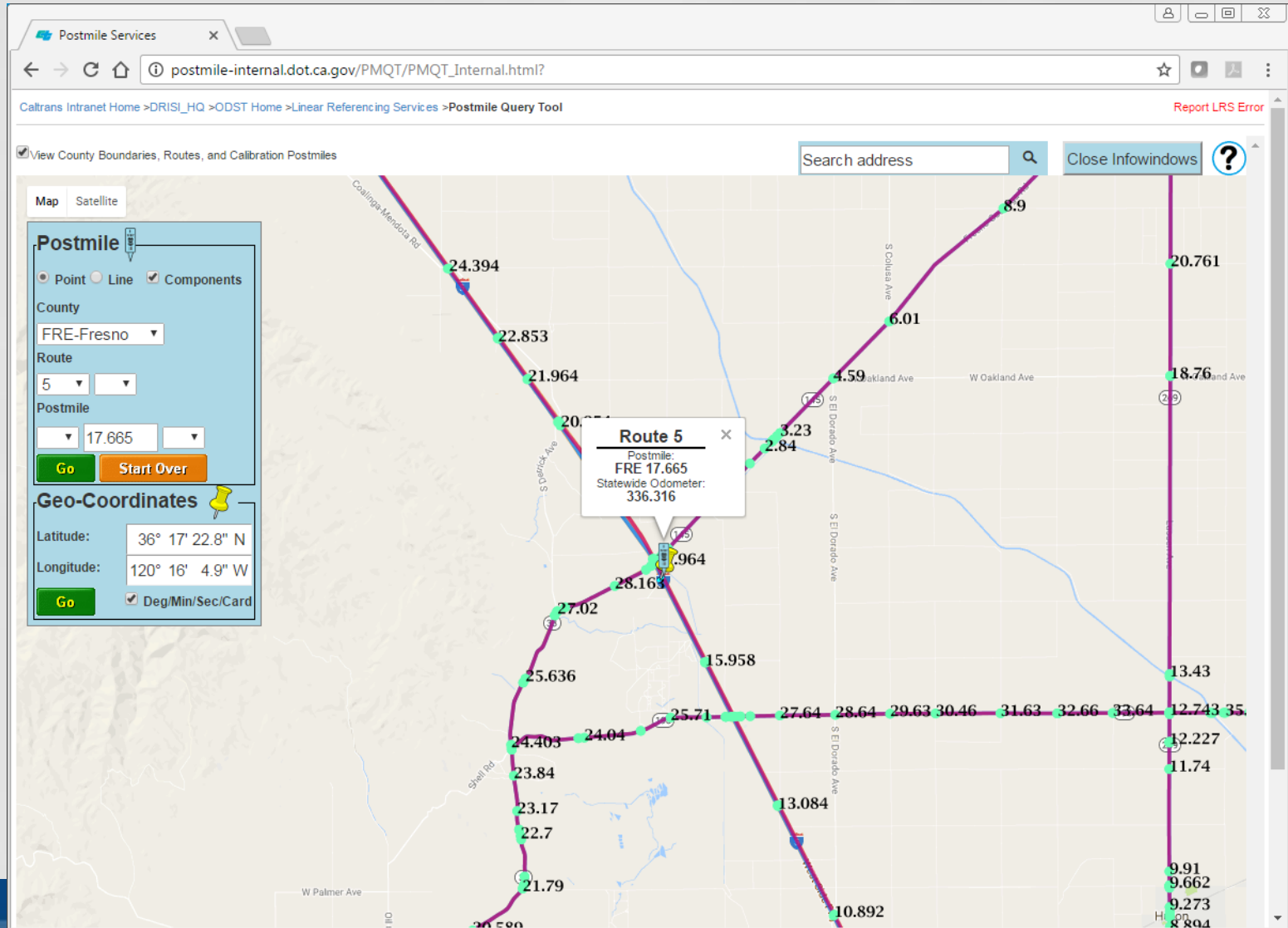
With Location



Linear Referencing Services

- **All Roads Linear Referencing System**
- **Postmile Query Tool**
- **Referencing Method Conversion Tool and Postmile Toolbar AddIn**

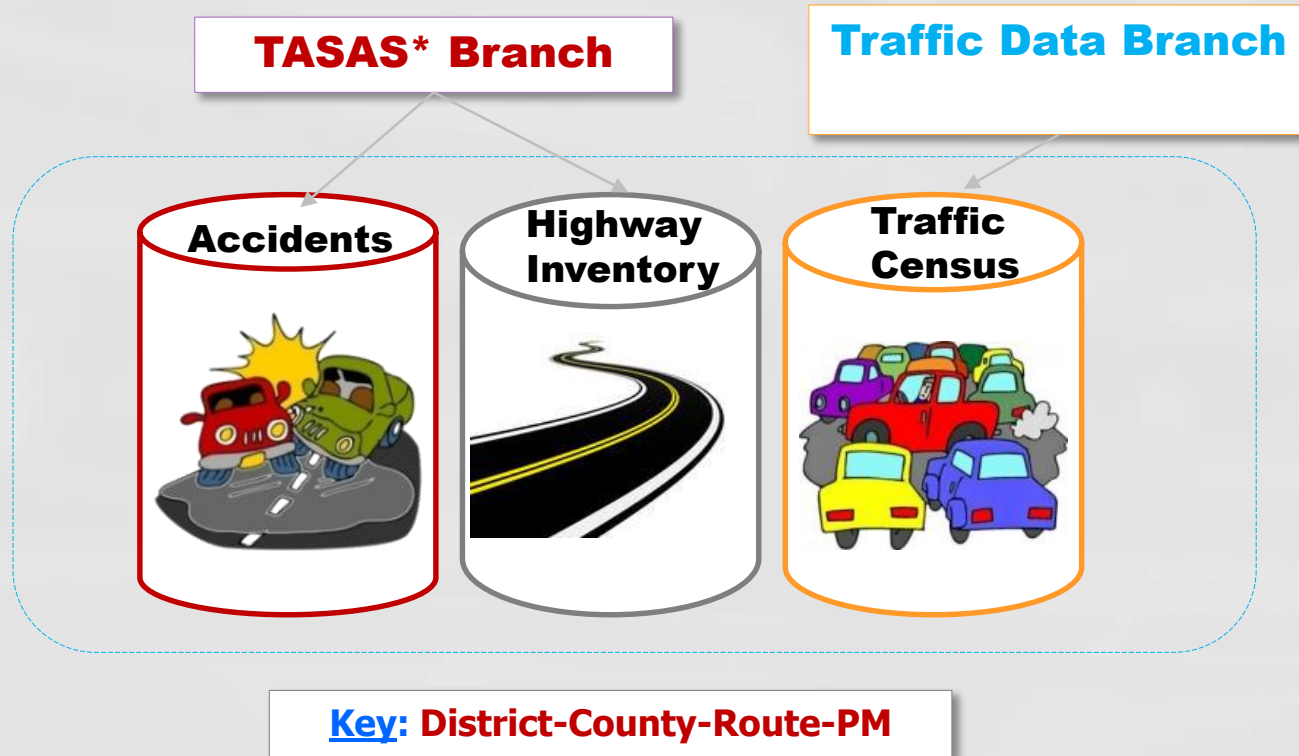
Linear Referencing System (LRS)



Highway System Information

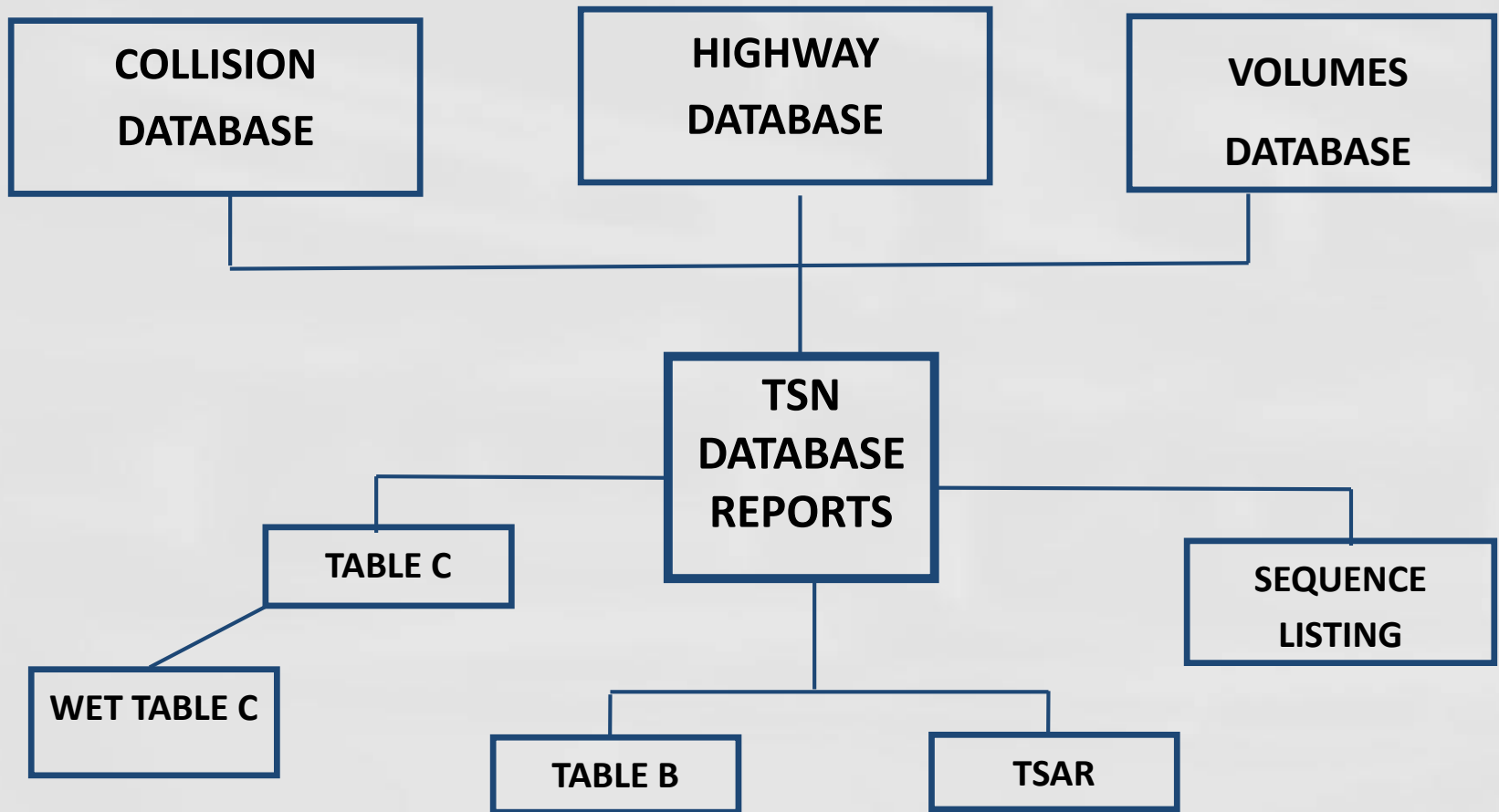
- Post Miles – Location on the roads
- Shoulder to Shoulder – Describes the roads features
- Collision Statistics and Analysis
- Highway System Designation
- California Road System

Transportation System Network (TSN) Database



*** TASAS – Traffic Accident Surveillance and Analysis System**

Collision Statistics and Analysis



All this gives you rates, trends, hot spots, reports, and helps set priorities.

Highway Inventory

- Contains the current and historical description of:

> 15,000 CL miles



> 20,000
intersections



> 16,000 ramps



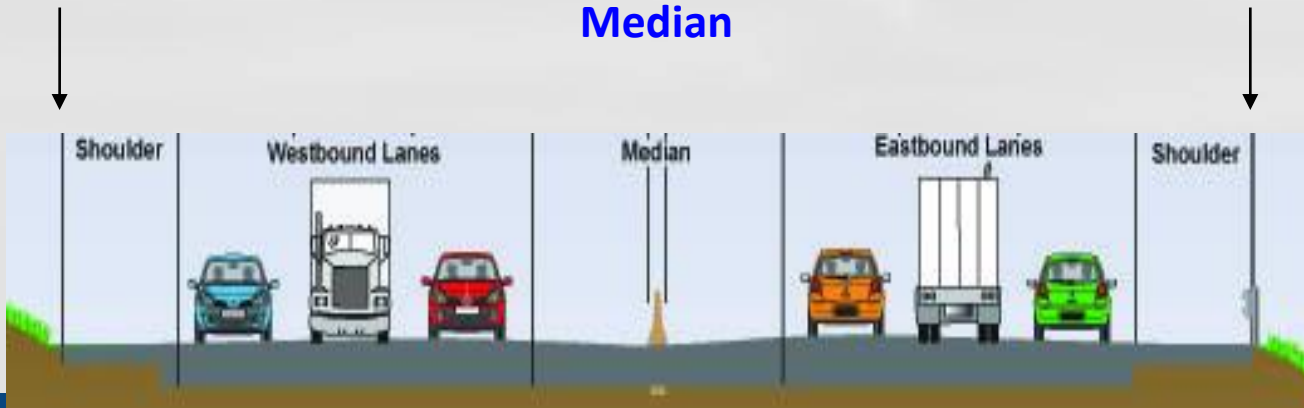
Left Edge
Shoulder

Left
Roadbed

Median

Right
Roadbed

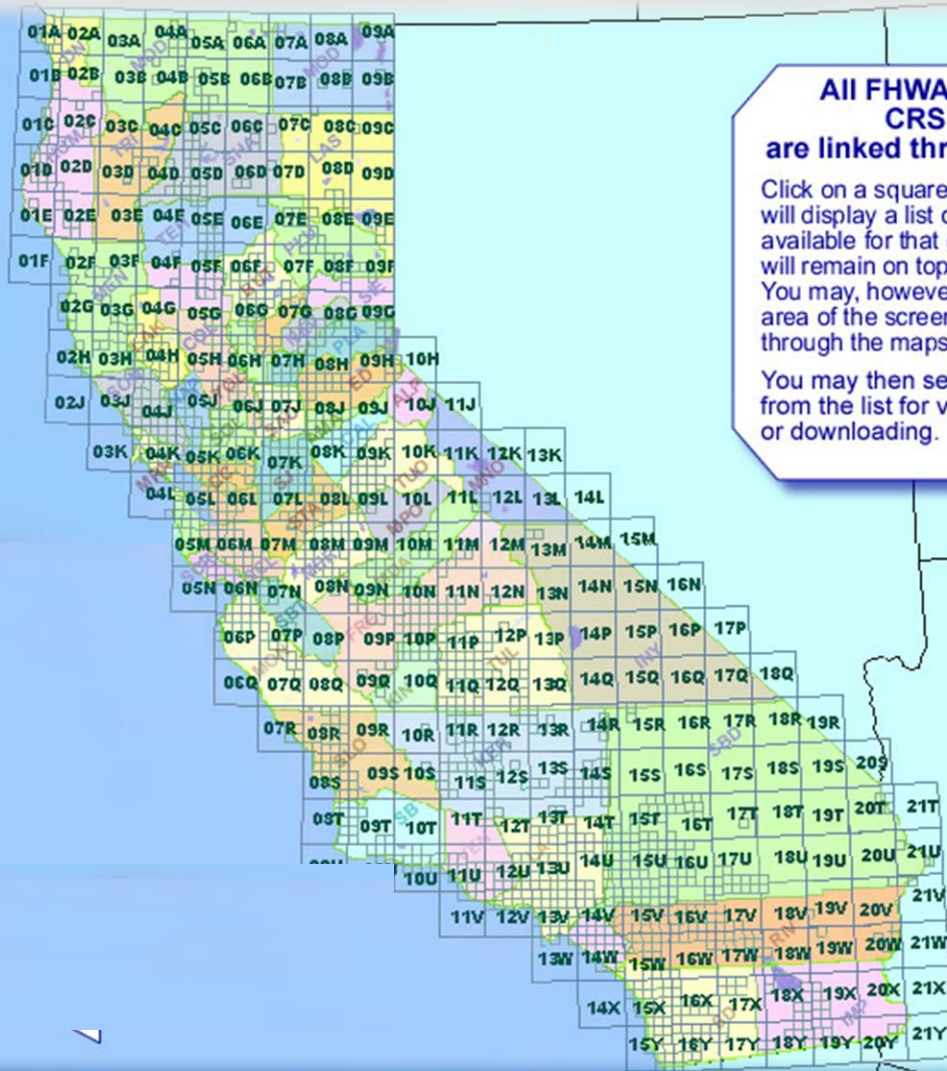
Right Edge
Shoulder



Highway System Designation

- Ensure the connectivity, integrity, continuity and functionality of the highway system and of the California Road System.
- Provide system designation information to the MPOs and local agencies.
- Answer questions: Is the route on the National Highway System or part of the Strategic Highway Network? What is the functional classification (arterial, etc.)?

California Road System (CRS Maps)

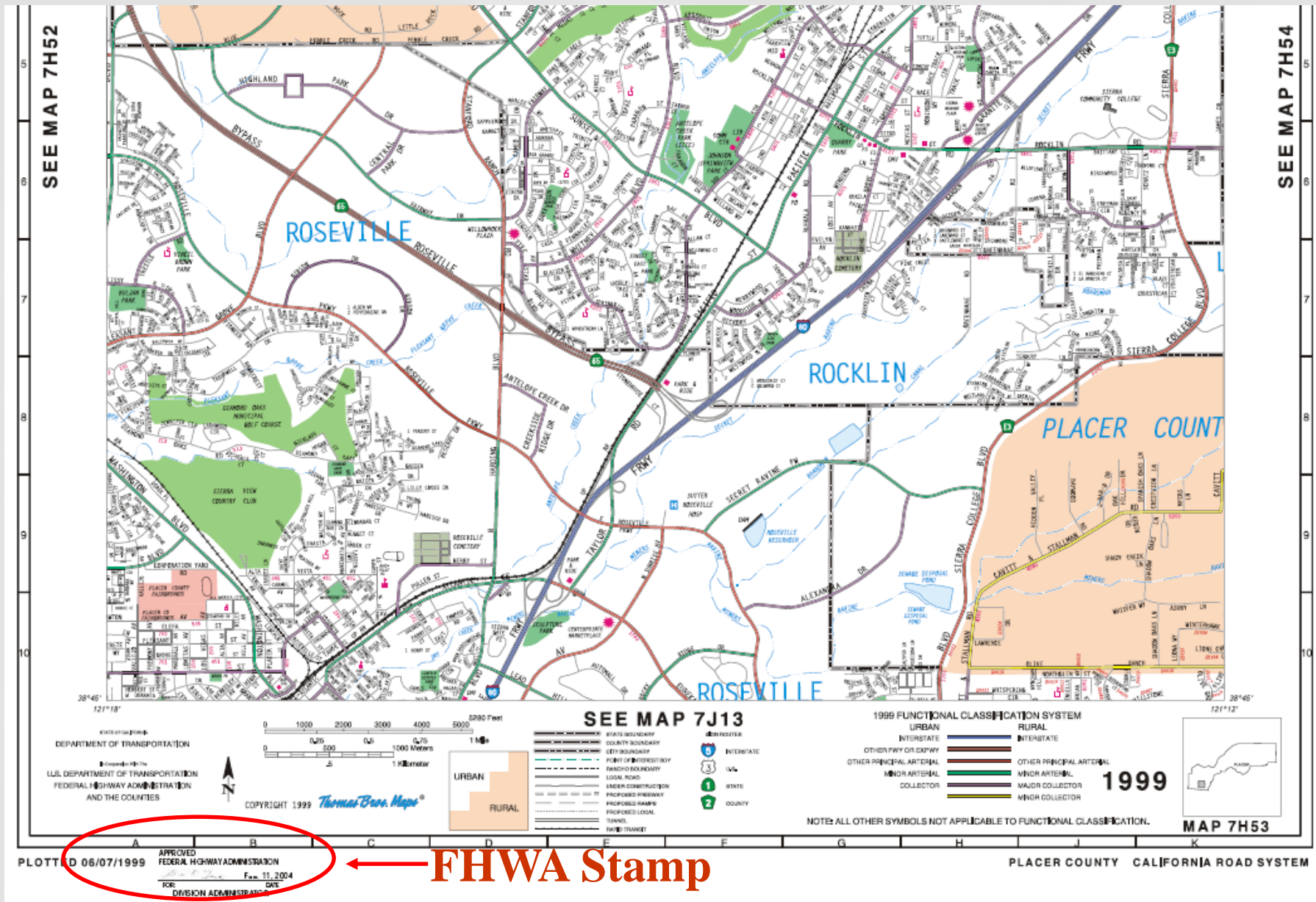


**All FHWA Approved
CRS Maps
are linked through this map.**

Click on a square and a pop-up box will display a list of all the maps available for that group. The box will remain on top until you close it. You may, however, drag it to another area of the screen as you look through the maps.

You may then select a .pdf file from the list for viewing, printing, or downloading.

CRS Maps Document Functional Classification



Federal Reporting

The Federal Government determines the budget for future transportation allocations base of these Reports.

- Highway Performance Monitoring System - HPMS
 - Federally mandated inventory system and planning tool, designed to assess the nation's highway system
 - Federally required for local funding allocations
 - Vehicle miles traveled (VMT) used by EPA for air quality conformity tracking
- Section 500 – Fiscal Reporting
 - Federally reported income and expenditures for state and local roads.
- Data is published in the FHWA Highway Statistics

Relevance

- Connects data consumers with data producers
- Develop tools to analyze and interpret data
- Transform data into information
- Integrate information to create knowledge
- Provides data governance
- Strengthens informed decisions

Contacts

- <http://onramp/tsi/>
- <http://www.dot.ca.gov/drisi/system-information.html>
- Caltrans Fact Booklet, California Quick Facts, Travel and Related Factors
 - Jahangir Kashkooli – (916) 654-8170
- GIS Services
 - Harold Feinberg - (916) 654-3853
 - Gerald Schumacher - (916) 653-5466

Contacts, cont.

- Transportation System Network
 - Brian Domsic - (916) 654-6839
- Highway System Designation and Highway Performance Monitoring System
 - Eric Wong - (916) 653-3272

Quiz Question

- Identify at least one DRISI product or service that can aid you in accomplishing your work?



Your poll will show here

1


Install the app from
pollev.com/app

2

Make sure you are in
Slide Show mode

Still not working? Get help at pollev.com/app/help
or

[Open poll in your web browser](#)



Thank you

